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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/773,287
Filing Date: February 09, 2004
Appellant(s): PALIN ET AL.

Jeffrey W. Gluck
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/28/09 appealing from the Office action mailed 3/23/09.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2002/0167931	JANG et al	11-2002
6,256,334	ADACHI, Hideo	07-2001
2003/0206561	SCHMIDL et al	11-2003
6,333,937	RYAN, David James	12-2001
7,110,472	SAKODA et al	09-2006
2003/0078006	MAHANY, Ronald L.	04-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 26, 27, 31-35, 39-43, 45 and 50-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang et al. (US. Pub No. 2002/01679931 A1; hereinafter "Jang") in view of Adachi (US. 6,256,334 B1).

Regarding **claim 26**, Jang teaches a method of transmitting information by a wireless communication device (see Jang, fig. 6, Bluetooth device, para. [0029]), the method comprising:

monitoring an energy level (see Jang, fig. 6, measurement unit 61; para. [0031] and fig. 7, S710, para. [0034]) of a monitored frequency band of a selected frequency hopping pattern (see Jang, para. [0033]); and

transmitting data on a transmit frequency band of said selected frequency hopping pattern (see Jang, fig. 7, S730, S740 and S750; para. [0036]) if said energy level indicates a particular condition of said monitored frequency band (see Jang, fig. 7, S720, para. [0035]), wherein a timing of further data transmission is determined based on a time at which the particular condition is met (see Jang, para. [0032-0033], 250 micro-second standby time).

Jang is silent to teaching that wherein a timing of further data transmission according the selected frequency hopping pattern is determined based on a time at which the particular condition is met. However, the claimed limitation is well known in the art as evidenced by Adachi.

In the same field of endeavor, Adachi teaches a method wherein a timing of further data transmission (see Adachi, col. 17, lines 57-60) according the selected frequency hopping pattern (see Adachi, col. 17, lines 48-55) is determined based on a time at which the particular condition is met (see Adachi, col. 17, lines 48-52, based on the received response signal and the timer value).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang with the teaching of Adachi in order to avoid transmission collision and improve communication throughput (see Adachi, col. 3, lines 58-67).

Regarding **claim 27**, the combination of Jang and Adachi teaches the method of Claim 26, wherein said transmit frequency band is the same as said monitored frequency band (see Jang, fig. 9B and para. [0033]), and wherein said particular condition comprises a condition that a pre- existing transmission in the monitored frequency band has been completed (see Jang, fig. 7, S720; fig. 9B, "listen f.9" of Piconet 2 detecting that "transmission f.9" of Piconet 1 (i.e. pre-existing transmission) has been completed).

Regarding **claim 53**, the combination of Jang and Adachi teaches the method of Claim 27, wherein transmitting data in the transmit frequency band is to commence following a predetermined time delay following completion of said pre-existing transmission (see Jang, para. [0032-0033], 250 micro-second standby time; see Adachi, col. 17, lines 57-60).

Regarding **claim 31**, the combination of Jang and Adachi teaches the method of Claim 26, further comprising:

selecting said selected frequency hopping pattern (see Adachi, fig. 6, S3; col. 17, lines 53-56) based on a determination of use of one or more frequency hopping patterns within a communication range of the wireless communication device (see Adachi, fig. 6, S1 and S2; col. 17, lines 49-53; neighboring networks are within the communication range because there are overlapping of communication area).

Regarding **claim 32**, the combination of Jang and Adachi teaches the method of Claim 31, wherein said determination is based on at least one process selected from the group consisting of: detecting one or more frequency hopping patterns; and receiving one or more notifications of frequency hopping patterns being used (see Adachi, fig. 6, S1 and S2; col. 17, lines 49-53).

Regarding **claim 33**, the combination of Jang and Adachi teaches the method of Claim 31, wherein said selecting said selected frequency hopping pattern comprises selecting a frequency hopping pattern that is being used within the communication range of the wireless communication device (see Adachi, fig. 6, S3; col. 17, lines 53-57).

Regarding **claim 34**, Jang teaches a wireless transmitter apparatus (see Jang, fig. 6, Bluetooth device, para. [0029]) comprising:

means for monitoring an energy level (see Jang, fig. 6, measurement unit 61; para. [0031] and fig. 7, S710, para. [0034]) of a monitored frequency band of a selected frequency hopping pattern (see Jang, para. [0033]); and

means for transmitting data on a transmit frequency band of said selected frequency hopping pattern (see Jang, fig. 7, S730, S740 and S750; para. [0036]) if said energy level indicates a particular condition of said monitored frequency band (see Jang, fig. 7, S720, para. [0035]), wherein a timing of further data transmission is

determined based on a time at which the particular condition is met (see Jang, para. [0032-0033], 250 micro-second standby time).

Jang is silent to teaching that wherein a timing of further data transmission according the selected frequency hopping pattern is determined based on a time at which the particular condition is met. However, the claimed limitation is well known in the art as evidenced by Adachi.

In the same field of endeavor, Adachi teaches a method wherein a timing of further data transmission (see Adachi, col. 17, lines 57-60) according the selected frequency hopping pattern (see Adachi, col. 17, lines 48-55) is determined based on a time at which the particular condition is met (see Adachi, col. 17, lines 48-52, based on the received response signal and the timer value).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang with the teaching of Adachi in order to avoid transmission collision and improve communication throughput (see Adachi, col. 3, lines 58-67).

Regarding **claims 35, 54 and 39-41**, the dependent claims are interpreted and rejected for the same reasons set forth above in claims 27, 53 and 31-33, respectively.

Regarding **claim 42**, Jang teaches a wireless communication device comprising:

a sensing module to monitor an energy level (see Jang, fig. 6, measurement unit 61; para. [0031] and fig. 7, S710, para. [0034]) of a monitored frequency band of a selected frequency hopping pattern;

a timing controller (see Jang, fig. 6, judgment unit 62 and Bluetooth wireless 65) coupled to the sensing module (see Jang, fig. 6, measurement unit 61) to provide an indication of said monitored frequency band to said sensing module (see Jang, fig. 7, S700, para. [0033]), and to determine if the one or more detection signals indicate that a particular condition has been satisfied by the monitored frequency band (see Jang, fig. 7, S720; para. [0035]); and

a transmit module coupled to the timing controller to receive an indication to transmit data in a transmit frequency band of the selected frequency hopping pattern (see Jang, fig. 7, S730, S740 and S750; para. [0036]), wherein said indication is to be generated by the timing controller subsequent (see Jang, para. [0032-0033], 250 micro-second standby time) to the timing controller determining the particular condition has been satisfied by the monitored frequency band (see Jang, fig. 7, S720, para. [0035]).

Jang is silent to teaching that wherein a timing of further data transmission according the selected frequency hopping pattern is determined based on a time at which the particular condition is satisfied. However, the claimed limitation is well known in the art as evidenced by Adachi.

In the same field of endeavor, Adachi teaches a method wherein a timing of further data transmission (see Adachi, col. 17, lines 57-60) according the selected frequency hopping pattern (see Adachi, col. 17, lines 48-55) is determined based on a

time at which the particular condition is satisfied (see Adachi, col. 17, lines 48-52, based on the received response signal and the timer value).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang with the teaching of Adachi in order to avoid transmission collision and improve communication throughput (see Adachi, col. 3, lines 58-67).

Regarding **claims 43 and 55**, the dependent claims are interpreted and rejected for the same reasons set forth above in claims 27 and 53, respectively.

Regarding **claim 45**, the combination of Jang and Adachi teaches the device of Claim 42, wherein said transmit module is further to continue to transmit further data according to said selected frequency hopping pattern according to said timing (see Jang, para. [0032-0033], 250 micro-second standby time; see Adachi, col. 17, lines 57-60).

Regarding **claim 50**, the combination of Jang and Adachi teaches the device of Claim 42, wherein said sensing module is further to sense the use of one or more frequency hopping patterns within a communication range of the device (see Adachi, fig. 6, S1 and S2; col. 17, lines 49-53; neighboring networks are within the communication range because there are overlapping of communication area), and wherein the timing controller is to select said selected frequency hopping pattern based

at least in part on one or more results obtained by the sensing module (see Adachi, fig. 6, S3; col. 17, lines 53-56).

Regarding **claim 51**, the combination of Jang and Adachi teaches the device of Claim 42, comprising:

a receive module to receive one or more notifications about use of one or more frequency hopping patterns within a communication range of said device (see Adachi, fig. 6, S1 and S2; col. 17, lines 49-53);

wherein the timing controller is to select said selected frequency hopping pattern based at least in part on said one or more notifications (see Adachi, fig. 6, S3; col. 17, lines 53-56).

Regarding **claim 52**, the combination of Jang and Adachi teaches the device of Claim 42, wherein said selected frequency hopping pattern corresponds to a frequency hopping pattern in use within a communication range of said device (see Adachi, fig. 6, S1-3; col. 17, lines 49-57; neighboring networks are within the communication range because there are overlapping of communication area).

Claims 28, 36 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang and Adachi as applied to claims 26, 34 and 42 above, and further in view of Schmidl et al. (US. Pub No. 2003/0206561 A1; hereinafter "Schmidl")

Regarding **claim 28**, the combination of Jang and Adachi teaches the method of Claim 26, wherein said particular condition comprises a condition that there is no pre-existing transmission in the monitored frequency band (see Jang, fig. 7, S720, para. [0035]).

The combination of Jang and Adachi is silent to teaching that wherein said transmit frequency band is different from said monitored frequency band. However, the claimed limitation is well known in the art as evidenced by Schmidl.

In the same field of endeavor, Schmidl teaches a method wherein said transmit frequency band (see Schmidl, fig. 4, para. [0060], channel M) is different from said monitored frequency band (see Schmidl, fig. 4, para. [0060], channel N).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang and Adachi with the teaching of Schmidl in order to advantageously select a frequency band whose communication quality is suitable for communication at a desire rate (see Schmidl, para. [0005]).

Regarding **claims 36 and 44,** the dependent claims are interpreted and rejected for the same reasons set forth above in claim 28.

Claims 30, 38 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang and Adachi as applied to claims 26, 34 and 42 above, and further in view of Ryan

(US. 6,333,937 B1).

Regarding **claim 30**, the combination of Jang and Adachi teaches the method of Claim 26.

The combination of Jang and Adachi is silent to teaching that wherein said data comprises one or more orthogonal frequency-division multiplexing (OFDM) symbols. However, the claimed limitation is well known in the art as evidenced by Ryan.

In the same field of endeavor, Ryan teaches a method wherein said data comprises one or more orthogonal frequency-division multiplexing (OFDM) symbols (see Ryan, col. 3, lines 35-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang and Adachi with the teaching of Ryan in order to improve the performance of the wireless communication (see Ryan, col. 3, lines 43-54).

Regarding **claims 38 and 46,** the dependent claims are interpreted and rejected for the same reasons set forth above in claim 30.

Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang and Adachi as applied to claim 42 above, and further in view of Sakoda et al. (US. 7,110,472 B2; hereinafter "Sakoda")

Regarding **claim 47**, the combination of Jang and Adachi teaches the device of Claim 42.

The combination of Jang and Adachi is silent to teaching that wherein said transmit module comprises:

a transmit buffer coupled to receive said indication from the timing controller; and a transform device coupled to an output of said transmit buffer to process data from the output of the transmit buffer to provide an output signal. However, the claimed limitation is well known in the art as evidenced by Sakoda.

In the same field of endeavor, Sakoda teaches a device wherein said transmit module (see Sakoda, fig. 10) comprises:

a transmit buffer (see Sakoda, fig. 10, buffer 81) coupled to receive said indication from the timing controller (see Sakoda, fig. 10, control section 82); and a transform device coupled to an output of said transmit buffer to process data from the output of the transmit buffer to provide an output signal (see Sakoda, fig. 10, IFFT 85; col. 14, lines 15-20 and 35-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang and Adachi with the teaching of Sakoda in order to prove a transmission method capable of performing desired communication without affecting other and/or neighboring communications (see Sakoda, col. 7, lines 3-8).

Regarding **claim 48**, the combination of Jang, Adachi and Sakoda teaches the device of Claim 47, wherein said transform device comprises an inverse fast Fourier transform (IFFT) device (see Sakoda, fig. 10, IFFT 85).

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang and Adachi as applied to claim 42 above, and further in view of Mahany (US. Pub No. 2003/0078006 A1).

Regarding **claim 49**, the combination of Jang and Adachi teaches the device of Claim 42.

The combination of Jang and Adachi is silent to teaching that wherein said one or more detection signals comprise one or more signals indicating one or more transitions in an energy level of the monitored frequency band. However, the claimed limitation is well known in the art as evidenced by Mahany.

In the same field of endeavor, Mahany teaches a device wherein said one or more detection signals comprise one or more signals indicating one or more transitions in an energy level of the monitored frequency band (see Mahany, para. [0248]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Jang and Adachi with the teaching of Mahany in order to improve performance and communication throughput under both light and heavy communication loading (see Mahany, para. [0019]).

(10) Response to Argument

A. *The limitation at issue is "wherein a timing of further data transmission according to the selected frequency hopping pattern is determined based on a time at which the particular condition (as indicated by the monitored energy level) is met."*

To clarify the Examiner's position as stated in the Final Action, the Examiner submits that Jang, as the primary reference, teaches "wherein a timing of further data transmission is determined based on a time at which the particular condition (as indicated by the monitored energy level) is met" but silent to "the further data transmission being according to the selected hopping pattern" which is cured by Adachi.

Furthermore, the Examiner also cited portion of Adachi as to arguably teaching "wherein a timing of further data transmission is determined based on a time at which the particular condition is met". The Examiner submits that the portion of Adachi cited for arguably teaching "wherein a timing of further data transmission is determined based on a time at which the particular condition is met" is meant to suggest and show the similarity between Jang's teaching and Adachi's teaching and why an ordinary skilled artisan would combine the teachings of Jang and Adachi.

While Appellant first argues against the secondary reference, Adachi, and then separately argues against the primary reference, Jang, the Examiner would response to arguments against Jang first. Furthermore, the Examiner submits that, in response to applicant's arguments against the references individually, one cannot show

nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

B. *Jang teaches "wherein a timing of further data transmission is determined based on a time at which the particular condition (as indicated by the monitored energy level) is met."*

The Examiner submits that Jang's teaching (para. [0031-0036]) reads on:

monitoring an energy level (see Jang, fig. 6, measurement unit 61; para. [0031] and fig. 7, S710, para. [0034]) of a monitored frequency band of a selected frequency hopping pattern (see Jang, para. [0033]); and

transmitting data on a transmit frequency band of said selected frequency hopping pattern (see Jang, fig. 7, S730, S740 and S750; para. [0036]) if said energy level indicates a particular condition of said monitored frequency band (see Jang, fig. 7, S720, para. [0035]), wherein a timing of further data transmission is determined based on a time at which the particular condition is met (see Jang, para. [0032-0033], 250 micro-second standby time).

In response to Appellant's argument, the Examiner submits that one must look to para. [0036] in order to understand para. [0031-0035].

Jang teaches:

[0031] Referring to FIGS. 6 and 7, the apparatus 60 for avoiding mutual interference between wireless communication systems, includes: a measurement unit 61 for measuring a channel state of a transmission slot to be allocated; a judgment unit 62 for judging data transmission on the basis of the channel state of the transmission slot measured in the measurement unit 61; and a control unit 63 for outputting a signal for performing a transmission operation of the data according to the judgment of the judgment unit 62.

[0032] When a communication path to another Bluetooth terminal composing the Piconet is set up, the transmission slot of the wireless communication system 65 is 625 .mu.s and a transmission time of data is about 360 .mu.s. Accordingly, when the wireless communication system 65 is operated in a reception mode, a standby time of at least 250 .mu.s is given to switch to a transmission mode after receiving data.

[0033] Thereafter, when receiving the data from a predetermined transmission slot, the wireless communication system 65 varies a frequency of a transmitter/receiver to a frequency of a channel to be used in the transmission slot to be allocated (S700). That is, the wireless communication system 65 maintains the reception mode for the standby time, and varies the frequency to the frequency of the channel to be used in the transmission slot according to the previously decided frequency hopping pattern.

[0034] A signal received through the channel used in the transmission slot for a switching time of the transmission and reception modes (i.e. standby time) is inputted to the measurement unit 61. The measurement unit 61 measures the strength of the received signal, thereby measuring a channel state of the transmission slot to be allocated (S710). A received signal strength indicator (RSSI) may be used as the measurement unit 61.

[0035] When the strength of the received signal measured in the measurement unit 61 is inputted, the judgment unit 62 judges data transmission by comparing the strength of the received signal with the strength of a reference signal (S720). When the strength of the received signal is smaller than that of the reference signal, the judgment unit 62 judges that the transmission slot has a good channel state. Preferably, the strength of the reference signal has a value between the strength of a received data signal and the strength of a received noise signal.

[0036] The control unit 63 controls the operation of the measurement unit 61 and the judgment unit 62, and outputs a signal for performing the transmission operation of the data according to the judgment of the judgment unit 62. In S720, when the judgment unit 62 judges that the transmission slot has a good channel state, the control unit 63 transmits the signal for performing the transmission operation of the data to the wireless communication system 65 (S730). The wireless communication system 65 converts the reception mode to the transmission mode (S740), and transmits the data through the allocated transmission slot (S750).

Here, Jang teaches, based on para. [0034], that measurement unit 61 monitors an energy level of a received signal and, based on para. [0035], judgment unit 62 determines when (at what time) the particular condition met. The particular condition is that the received signal strength (monitored energy level) is smaller than the reference level, a.k.a. good channel state. Furthermore, a time at which (when) the particular is

met is the time when judgment unit 62 determines that the RSSI is smaller than a threshold (i.e. When the strength of the received signal is smaller than that of the reference signal).

In Jang's para. [0036], a timing of further data transmission is the timing of the end of the standby time delay (250 microsecond), see para. [0032], after a timing of switching from reception to transmission (i.e. the wireless communication system 65 converts the reception mode to the transmission mode (S740), and transmits the data through the allocated transmission slot (S750)). Furthermore, the timing of switching is based on a time at which judgment unit 62 judges the condition is met (i.e. when the judgment unit 62 judges that the transmission slot has a good channel state,).

Therefore, the Examiner submits that Jang teaches "wherein a timing of further data transmission is determined based on a time at which the particular condition (as indicated by the monitored energy level) is met."

C. *Adachi teaches "wherein a timing of further data transmission according to the selected frequency hopping pattern is determined based on a time at which the particular condition (as indicated by the received signal) is met."*

Adachi teaches determining a timing of further data transmission according to the selected frequency hopping pattern is determined based on a time at which the response signal is received. Here, the claimed particular condition is that whether a response signal is received. Furthermore, the Examiner submits that receiving a RF signal requires detecting some RF energy.

Specifically, Adachi teaches (col. 17, lines 20-60) the timing of frequency hopping is based on the time value of a received signal, providing the timing information of a neighboring LAN (see App. B., page 9, lines 1-3). Here, the particular condition is met when the response signal is received and a time at which the condition is met is a time when the response signal is received.

Appellant argues that receiving a RF signal is not the claimed particular condition and distinguishes between receiving a RF signal and detecting a RF energy. However, the Examiner submits that Jang teaches the claimed “particular condition” as discussed above in B. Therefore, the Examiner submits that the combination of Jang and Adachi teaches the claimed invention.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner’s answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Wen W Huang/

Examiner, Art Unit 2618

Conferees:

Matthew Anderson

/Matthew D. Anderson/

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